

WELDING PROCEDURE SPECIFICATION

WELDING PROCESS: GTAW- and GTAW- ASME: X AWS: X OTHER:

SUPPORTING POR: 200-23-P P-WS-10-1 P-WS-10-2 P-WS-151-1 P-WS-100-2

P-WS-100-1

JOINT: This WPS shall be used in conjunction with the General Welding Standards (GWS) and Welding Fabrication Procedure (WFP) sections and criteria for joint details, repairs, NDE, inspection etc.

Weld Joint Type: Butt/Groove/Fillet Class: Full/Partial Penetration See GWS 1-06 and WFP's for joint details Preparation: Thermal (plasma) / Mechanical **Root Opening:** 0 - 3/32**Backing:** Strap/ring/back welding **Backgrind root:** Y **Backing Mat.:** Al Grind GTAW Flux: N/A **Bkgrd Method: Backing Retainer:** N/A **FILLER METALS:** ER4043 ER4043 Class: and **Size:** 1/16 A No: N/A SFA Class: 5.10 and 5.10 F No: 23 and 23 3/32 1/8 Insert: N/A Insert Desc.: N/A Weld Metal Thickness Ranges: Flux: Type: NA Size: 0 0.032 thru **AWS Root Pass:** 0.75 **Filler Metal Note: AWS Balance:** 0.032 thru 0.75 **ASME Root Pass:** 0.032 thru 0.1870.064 thru 0.75 **ASME Balance:**

BASE MATERIAL P No. 23 Gr No. All to: P No. 23 Gr No. All

Spec. B-209 Al- Plate & sheet Grade: All to: Spec. B-209 Al- Plate & sheet Grade: All

Qualified Pipe Dia. Range: ≥ AWS: 6 ASME: 1.5

Qualified Thickness Range: AWS: 0.032 thru 0.750 ASME: 0.032 thru 0.750

QUALIFIED POSITIONS: AWS: All ASME: All Vert. Prog.: V/Up

Preheat Min. Temp.: 70 °F GAS: Shielding: Argon or

Gas Composition: 100 / 0 / **Interpass Max. Temp.:** 500°F / 0 % 0 / 0 % 70°F 10 25 0 **to** 0 **Preheat Maintenance:** Gas Flow Rate cfh: to PWHT: Time @ °F Temp. 0 **Backing Gas/Comp:** 100 % Argon

Temp. Range: 0°F Backing Gas Flow cfh: 3 to 10

to 0°F Trailing Gas/Comp: N/A 0 %

APPROVAL: Signatures on file at ENG **DATE:** 8/14/2006

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WPS NO: 2010-23

WELDING CHARACTERISTICS:

Current: AC and AC Tungsten Type: EWTh-2 Transfer Mode: N/A

Ranges: Amps 25 to 300 Tungsten Dia.: 3/32 Pulsing Cycle: 40 to 60

Volts 12 to 22 Background Current: 0

Fuel Gas: N/A Flame: N/A Braze temp. °F 0 to 0

WELDING TECHNIQUE: For fabrication specific requirements sucg as fittup, cleaning, grinding, PWHT

and inspection criteria refer to Volume 2, Welding Fabrication Procedures

Technique: Manual Cleaning Method: Wire Brush, File, Grind

Single Pass or Multi Pass: M Stringer or Weave bead (S/W): S/W Oscillation: N

GMAW Gun Angle °: 0 to 0 Forehand or Backhand for GMAW (F/B): N/A

No Pass S>1/2": GMAW/FCAW Tube to work distance: N/A

Maximum K/J Heat Input: 0 Travel speed: Variable Gas Cup Size: #5

PROCEDURE QUALIFIED FOR:

Charpy "V" Notch: N/A Nil-Ductil Transition Temperature: N/A Dynamic Tear: N/A

Comments:

Weld Layer	Manual Process	Filler Metals	Size	Amp Range	Volt Range	Travel/ipm	Nozzle Angle	Other
1	GTAW-	ER4043	1/16	25 to 160	12 to	to	0 to 0	
2	GTAW-	ER4043	3/32	150 to 250	to	to		
3	GTAW-	ER4043	1/8	240 to 300	to	to		
5	GTAW-	ER4043		to	to	to		
6								

REM. * Weld layers are representative only - actual number of passes and layer sequence may vary due to variations in joint design, thickness and fitup.

Use of LANL Welding Procedures and Welder Qualifications for non-LANL work shall be at the sole risk and responsibility of the Subcontractor, and the Subcontractor shall indemnify and save LANL and the Government harmless from any and all claims, demands, actions or causes of action, and for any expense or loss by reason of Subcontractor's and their employees posession and use of LANL procedures and qualifications.

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